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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/634,516

08/04/2003

John William Mitchell

06433 USA

6879

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AIR PRODUCTS AND CHEMICALS, INC.  
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EXAMINER

DAVIS, BRIAN J

ART UNIT

PAPER NUMBER

1621

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/634,516

Applicant(s)

MITCHELL ET AL.

Examiner

Brian J. Davis

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-12, 19, 20 and 22 is/are rejected.
- 7) ☒ Claim(s) 7-9, 13-18, 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/4/03; 1/14/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

Claim 23 is objected to because of the following informalities: in the last line of the claim, the phrase "...potassium and cesium" is non-standard English grammar. The examiner respectfully suggests that the phrase should properly be: "...potassium or cesium." Appropriate correction is required.

The examiner also respectfully requests applicant's assistance in correcting any other minor grammar and/or spelling errors that may be present in the claims.

### *Claim Rejections - 35 USC § 112, FIRST PARAGRAPH*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for amino ether alcohols of the formula  $NR^1R^2R^3$  reacted in the vapor phase with amines of the formula  $NHR^4R^5$  (both defined in claim 2) to produce the corresponding amino ether amines using a catalyst comprising Cu/Zn does not reasonably provide enablement for the *universe* of amino ether alcohols reacted in the vapor phase with the *universe* of amines to produce the *universe* of amino ether amines using a catalyst comprising Cu/Zn. The specification does not

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enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

With regard to rejections under 35 USC 112, first paragraph, the following factors are considered (*In re Wands* 8 USPQ 2d 1400, 1404 (CAFC 1988)): a) Breadth of claims; b) Nature of invention; c) State of the prior art; d) Level of ordinary skill in the art; e) Level of predictability in the art; f) Amount of direction and guidance provided by the inventor; g) Working examples and; h) Level of experimentation needed to make or use the invention based on the content of the disclosure.

a)The claims are quite broad with respect to the compound prepared and starting materials used: the universe of amino ether alcohols reacted with the universe of amines to yield the universe of amino ether amines.

b,c)The nature of the invention is determined in part by the state of the prior art. The prior art in general teaches processes related to that of the instant invention under specific reaction conditions. That is, starting materials, products, solvents, catalysts, temperature ranges etc. are explicitly defined.

d)The level of skill in the art is considered to be relatively high.

e)The level of predictability in the art is considered to be relatively low. Even under the best of circumstances, and several hundred years after Lavoisier laid the foundations of its modern practice, chemistry remains an experimental science. This is particularly true of the catalytic chemical arts.

f,g)The amount of direction provided by the inventor is considered to be determined by the specification and the working examples. Applicant provides 6

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working examples according to the invention and 1 comparative example. Of the 6 working examples, 5 are drawn to the reaction of DMAEE with MMA to yield TMAEE. The remaining example is drawn to the reaction of DMAEE with DMA to yield BDMAEE.

h) Applicant's 6 working examples cannot be reasonably extrapolated to include the universe of amino ether alcohols reacted with the universe of amines to yield the universe of amino ether amines. It is not possible to make and use the instant invention without an undue level of experimentation. The specification must teach how to make and use the invention, not how to figure out for oneself how to make and use the invention. *In re Gardner*, 166 USPQ 138 (CCPA 1970).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10-12, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US 4,153,581.

The reference teaches the reaction of an alcohol and an aminating agent to produce an amine using a trimetallic catalyst of composition 20-90% Co, 8-72% Cu and 1-16% of Fe, Zn, Zr and mixtures of thereof (column 1 line 43). The reference emphasizes that the reaction is a general reaction and applicable to a wide variety of starting materials and catalysts: any alcohol that can be used in known ammonolytic

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processes (column 3 line 22); ammonia, primary or secondary amines as the aminating agent (column 4 line 19), trimetallic catalysts of composition Co/Cu/Zn (examples 1-8). Hydrogen is generally also present (column 4 line 54). The reaction may be continuous or batch and may be carried out in both the liquid or vapor phase (column 5 line 12). Minimum temperatures and pressures are in the range of at least about 75°C to about 1000psi, practical considerations are the only real limit on the upper values (column 4 line 67). A fixed bed tubular reactor may be employed (example 34). The catalyst may be supported (alumina, silica, etc.) or unsupported (column 2 line 27). The catalyst is reduced with hydrogen prior to use (column 2 line 56).

### ***Allowable Subject Matter***

Claims 7-9, 13-18 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 23 would be allowable once the objection outlined in this Office Action has been overcome.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 4,480,131, US 4,642,381 and *Izvestiya Akademii Nauk*,

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*Seriya Khimicheskaya* (1993), Vol. 4, p. 799-800 (CAPLUS abstract) are cited to show related reactions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Davis whose telephone number is 571-272-0638. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**BRIAN DAVIS**  
**PRIMARY EXAMINER**

Brian J. Davis  
April 15, 2005